

Name: _____
Mr. Willis
Conceptual Physics: _____
Date: _____

Unit XII
The Universe
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XII

Earth/Moon Relationship Activity

Objective: To calculate the distance between scale models of the earth and the moon.

Procedure:

1. If the earth were the size of an official basketball, then the moon would be the size of (circle one) another basketball? a soccer ball? a baseball? a tennis ball? a golf ball? a marble?
2. The diameter of the earth in kilometers is _____.
3. The diameter of the moon in kilometers is _____.
4. What percentage of the earth's diameter is the moon's diameter? _____
(Divide the smaller diameter by the larger diameter)
5. Use the list below to confirm or change your answer to question #1.

Type	Dia (cm)
Official basketball	24
Size 5 soccer ball	22
Baseball	7.3
Tennis ball	6.9
Golf ball	4.3
marble	0.6

If the Earth is a basketball then the Moon is a _____.

6. a. Use an official basketball as a model of Earth. Use a second ball, the one you determined from Question 5, as a model of the Moon.
b. Determine the scale of your model system by setting the diameter of the basketball equal to the diameter of Earth.

_____ cm = _____ km therefore,

1 cm = _____ km

7. If the distance to the Moon from Earth is 382,500 km, then how far apart must you separate the two scale models to accurately depict the Earth/Moon system?

Using the scale value from Step 7, the model separation in centimeters (x) is derived:

$$x = \frac{\text{actual distance to the Moon in kilometers}}{\text{scale value in kilometers}}$$

x =

x = centimeters. Convert your answer to meters. The two scale models must be separated by meters.

8. Set up your scale model of the Earth/Moon system. Does it fit into this classroom? Sketch the floor layout of the room and show how you could fit the model into the room. Make sure to include measurements for the room and show the proper scale of your model as a percentage of those measurements.